

that city or near Cambridge. I have another from the collection of the late Mr. Millard, and the third is in the cabinet of Mr. Waterhouse; it appears to be extremely rare or very local.

13. *Sitona cambrica* (Kirb. MSS.), Steph. 1831.
 — *cribricollis*, Schönh. 1834.
 — *rugulosus* (Dillw.), Kirb. MSS.

This insect is very distinct from every other species of this genus.

I have occasionally found a few specimens in Yorkshire inhabiting moist meadows in June, but never in the south of England. Barnes Common, Hampstead, and Plumstead, in marshy places, June and July, but scarce, Mr. S. Stevens.

14. *S. grisea*, Fab., Mus. Banks., Schönh.
 — *gressorius*, Fab., Germ., Schönh.
Curc. fuscus, Marsh.
 — *trisulcus*, Kirb. MSS.

This remarkably distinct insect appears to be the true *Curc. griseus* of Fab., according to the two specimens pinned to that name in the Banksian cabinet, and referred to by Schönherr. *Curc. griseus* of Marsh. is very distinctly a variety of *Curc. lineatus* of Linn.

XXXII.—*A Synopsis of the British Rubi.*

By CHARLES C. BABINGTON, M.A., F.L.S., F.G.S. &c. *

[Continued from p. 175.]

9. *R. cordifolius* (W. et N.); caule arcuato anguloso glabriusculo, aculeis validis rectiusculis horizontalibus declinatisve, foliis quinatis coriaceis subtus tomentosus, foliolo terminali ovato vel subrotundo vel cordato-cuspidato, *infimis petiolatis intermediis dissitis, panicula composita hirta.*

R. cordifolius, *Rub. Germ.* 21. t. 5.

R. rhamnifolius, *Rub. Germ.* 22. t. 6; *Eng. Bot. Suppl.* t. 2604; *Bab. Man.* 93.

Stems many feet long, naked or slightly hairy. Leaflets variable in size, soft and green or whitish beneath; in some rare instances nearly or quite glabrous on both sides. Terminal leaflet cordate roundish cuspidate in *R. cordifolius*, ovate or roundish-ovate acute in *R. rhamnifolius* of the 'Rubi Germanici.' Panicle rather long; the lower branches often elongated and spreading, axillary; rachis downy. Petals roundish.

Common. July and August.

Obs. 1. I have willingly followed Mr. Borrer and many other

* Read before the Botanical Society of Edinburgh, Feb. 12, 1846.

recent observers in combining two plants of the 'Rubi Germ.,' but adopted the above name (which stands first in the 'Rubi Germ.')

in order to avoid the confusion attending the use of that of *R. rhamnifolius*. It is also the more appropriate.

Obs. 2. Plants are occasionally found which would, at sight, be referred to this species, but which from their nearly sessile lower leaflets overlapping the intermediate pair can hardly be joined with it. In some other respects they seem to occupy a place between this and the preceding species, to which they are the more nearly allied in technical character. One of these dubious specimens, from Islay, N. B., has the terminal leaflet of one of its leaves partially subdivided at the base, thus showing an approach to the suberect group: the same leaflet is also quite abrupt at the end, closely resembling that of *R. discolor*, var. *abruptus*. Another, from near Midford Castle near Bath, is marked "agrees with a specimen of *R. rhamnifolius* from Nees in Mr. Borrer's herbarium exactly." Another from Crow Moele, Salop, is ticketed by Mr. Leighton "*R. rhamnifolius*, approaching *R. cordifolius*, Nees," on that author's authority. On table 6 of the 'Rubi Germ.' two plants are figured as *R. rhamnifolius* α . and β , the former with distinct lower leaflets, the latter with overlapping ones. No reference is made to these varieties in the text of that work, nor is anything said about this character. Mr. J. Adamson has given to me a specimen gathered near Gouroch, Ayrshire, in which the leaves are thin and flexible with a convex upper surface. It is rather more hoary in appearance than is usual in this species, but seems to be referable to *R. cordifolius*.

10. *R. discolor* (W. et N.); caule arcuato anguloso sæpissime sulcato strigoso-sericeo, aculeis rectiusculis decurvatis horizontalibusve, foliis quinatis coriaceis tenuibus marginem versus decurvatis subtus albo-tomentosis, folioli terminali obovato vel oblongo acuminato, panicula elongata angusta subaphylla tomentosa.

R. discolor, *Rub. Germ.* 46. t. 20.

R. fruticosus, *Eng. Bot.* 715; *Rub. Germ.* 24. t. 7.

Stem long, usually deeply furrowed. Prickles large, strong, numerous. Leaflets variable in shape, usually, in English plants, obovate and acute, sometimes (*R. abruptus*, Lindl.) cuneate-oblong, abruptly truncate and cuspidate. Panicle with patent branches, occasionally with long axillary ones below. Petals roundish-obovate.

β . *thyrsoideus* (Bell Salt. !); caule subglabro, aculeis rectis, foliolis planis subtus molliusculis, paniculæ plerumque breviusculis tomentosæ ramis patentibus. *Phytol.* ii. 104.

γ . *macroacanthus* (Bell Salt. !); caule sericeo pilis paucis patentibus ornato, aculeis validis pilosis, foliolis planis subtus molliusculis,

paniculæ tomentosæ ramis ascendentibus. *Ann. Nat. Hist.* xvi. 366.

R. macroacanthos, *Rub. Germ.* 44. t. 18.

δ. *argenteus* (Bell Salt. !); caule patente-piloso, aculeis rectis, foliis planis subtus molliusculis, paniculæ tomentosæ ramis ascendentibus. *Ann. Nat. Hist.* xvi. 367.

“*R. argenteus*, *Rub. Germ.* t. 19.”

Common. July and August.

Obs. 1. I have placed both the plants of the ‘Rubi Germ.’ under the type of this species, but neither of those plates exactly represents either of our plants. The narrow leaves of the *R. fruticosus* of that work agree well with the more common English plant, but then they are combined with a deeply furrowed glabrous barren shoot. In our plant this form of leaf is most usually found upon silky angular but scarcely furrowed shoots. Also the much rounder leaves of the *R. discolor* (Rubi Germ.) is an attendant upon a furrowed barren shoot and a thyrsoid panicle in this country.

Obs. 2. The panicle in *var. α.* and *β.* has a different appearance from that of *var. γ.* and *δ.* owing to its lower branches, although short, spreading at nearly a right angle from the rachis; in the later varieties they are usually rather longer, but ascend from a very acute angle with the rachis.

Obs. 3. Dr. Bell Salter has given to me a form of this plant under the manuscript name of *var. levis*, differing from the typical state in having its flowering shoot nearly without prickles. It seems hardly deserving of a distinctive name; it is probably the *var. inermis* of Godron. The *R. abruptus* (Lindl.) can only be considered as a state of the species, not a true variety. Such forms are found in many if not all the species.

Obs. 4. A *frustratus* form of this species occasionally may be observed. It is almost exactly suberect, showing no tendency to prolong its growing shoots so as to reach the ground, or indeed to do more than very slightly curve at the summit. In all other respects it resembles the typical plant.

11. *R. leucostachys* (Sm. !); caule arcuato anguloso piloso-villoso, aculeis æqualibus rectiusculis horizontalibus, foliis quinatis coriaceis planis subtus mollibus fulvo-albove-hirtis micantibus, foliolo terminali ovato rotundatove abrupte apiculato, panicula elongata angusta foliosa villosa vel tomentosa.

R. leucostachys, *Eng. Bot. Suppl.* 2631.

R. pubescens, *Rub. Germ.* 42. t. 16.

Stem long, not furrowed, often nearly round; *pubescence* loose, *weak*. Prickles numerous, hairy. Leaflets, particularly those of the flowering shoot, often wavy at the margins. Flowering shoot

and panicle with numerous long straight prickles (in which respect it differs from the figure quoted above from the 'Rubi Germ.')

β . *vestitus* (Bell Salt. !); caule æstivo suberecto, foliolis subrotundis acutis mucronato-dentatis subtus pallide viridibus albidisve. *Phytol.* ii. 105.

R. vestitus, *Rub. Germ.* 81. t. 33.

R. diversifolius, *Lindl. Syn. ed.* 1. 83.

R. villicaulis, *Leight. ! Fl. Shrop.* 231.

R. villicaulis a, *Bab. Man.* 95.

γ . *argenteus* (Bell Salt. !); caulis pubescentia densa argenteaque, foliolo terminali subrotundo-obovato acuminato duplicato-dentato subtus albo sericeo micanteque, caulis paniculæque aculeis maximis, paniculæ ramis inferioribus elongatis et erecto-patentibus. *Ann. Nat. Hist.* xvi. 366.

R. villicaulis β , *Bab. Man.* 95.

Hedges and thickets. β . in shady places. γ . Channel Islands. Sussex and Isle of Wight, *Dr. Bell Salter.* July and August.

Obs. I fully concur with my friend Dr. Bell Salter in combining these three plants, although it would be difficult to believe that they are only varieties if the extreme forms alone were before us. The remarkably round leaflets and somewhat suberect habit of *R. vestitus*, and the branching corymbose and often very straggling panicle of *R. argenteus* would undoubtedly afford good distinguishing marks, did we not see numerous intermediate forms connecting both of them with the typical *R. leucostachys*.

12. *R. sylvaticus* (W. et N.); caule arcuato anguloso subteretive piloso, aculeis paulo inæqualibus tenuibus rectis, foliis quinatis subtus mollibus micantibus pallideque viridibus, foliolo terminali cordato-ovato apiculato, paniculæ compositæ foliosæ ramis brevibus.

R. sylvaticus, *Rub. Germ.* 41. t. 15.

R. villicaulis γ , *Bab. Man.* 95.

Stem not furrowed, often nearly round; *pubescence of shining patent nearly parallel hairs.* Prickles moderate, rather numerous, declining, hairy at their base, not quite confined to the angles. Leaflets *serrate*, usually tinged with purple on the veins beneath. Flowering shoot and panicle with short slender prickles and setæ usually sunk in the dense pubescence; floral leaves usually 3-fid or simple.

β . *villicaulis*; foliolo terminali ovali rotundatove cuspidato, paniculæ ramis longioribus: aculeis validioribus, caulis aculeis subæqualibus sparsis.

R. villicaulis, *Rub. Germ.* 43. t. 17.

Rather rare. Bath; Killarney; Loch Eil and Linlithgow.

β. Isle of Wight and Dorset, *Dr. Bell Salter*. July and August.

Obs. The differences between the *R. sylvaticus* and *R. villicaulis* of the 'Rubi Germ.' do not seem to be more than those of varieties. The under side of the leaves of the latter is usually rather paler, but in all respects the characters between them are only those of degree. I take *R. sylvaticus* as the specific name from its standing first in that work, and also because *villicaulis* has been often misapplied in this country to *R. leucostachys* β.

13. *R. Borreri* (Bell Salt. !); caule procumbente tereti hirto, *aculeis* crebris inæqualibus longis tenuibus *deflexis*, *foliis* quinatis *subtus* *hirtis* *concoloribus*, *foliolo terminali late obovato-lanceolato cuspidato*, *paniculæ corymbosæ* ramis inferioribus longis decompositis flore terminali subsessili, sepalis fructum hemisphæricum laxè amplectentibus.

R. Borreri, *Bell Salter in Ann. Nat. Hist.* xv. 306.

Stems mostly quite prostrate, very prickly; pubescence of patent hairs. Prickles not confined to the angles of the stem. Leaflets of the same colour on both sides. Flowering shoot and panicle with few short slender prickles, hairy and slightly setose. Sepals linear-lanceolate.

"β. *Wilsoni* (Bell Salt. MSS.); pilis in aciculos paucos abeuntibus, aculeis ad basin latis."

Apse Heath and Pagham Common, Isle of Wight, *Dr. Bell Salter*. β. Near Buglawton, Cheshire, *Mr. S. E. Wilson*. June.

14. *R. Sprengelii* (Weihe); caule procumbente tereti sparsim piloso, aculeis uncinatis, *foliis ternatis*, *foliolis obovatis acuminatis* *concoloribus* *subtus* *venosis*, *paniculæ ramosæ tomentosæ* ramis *divaricatis* *paucifloris*, sepalis ovatis acuminatis dense tomentosis patentibus.

R. Sprengelii, *Rub. Germ.* 32. 10.

A low trailing plant with greenish purple stems, which are very slender and either simple or branched. Prickles purple, yellow-tipped, small and slender, and so extremely uncinuate that the point is parallel with the stem. Hairs rigid, shining and patent, but not sufficiently numerous to produce the appearance of pubescence. Leaves *rarely* otherwise than ternate. Petioles armed as the stem, furrowed above. Leaflets obovate acuminate, irregularly but finely and acutely serrated, bright shining green above, with a few spreading hairs and the principal venations grooved, green and hairy beneath with very prominent veins, and the midrib armed with a few slender uncinuate prickles. Terminal leaflet with its petiole geniculated, lateral leaflets broader externally and somewhat lobed. Stipules with small glands. *Panicle*—or rather flowering stem, as it grows erect from the last

year's shoot apparently from the ground—in the lower part leafy and clothed nearly as the barren shoot, but the prickles somewhat smaller, and the hairs more numerous and longer. Leaves like those of the barren shoot but rather more hairy: upper or floral portion branched. Branches rather distant, slender and few- (about three-) flowered and spreading; one or two lower ones axillary from ternate leaves, which towards the summit pass into leafy bracts. Peduncles and calyx very hairy, with shining patent hairs interspersed with shaggy pubescence. Petals ovate, obtuse, rugose, of a very beautiful rose-pink. Stamens erect.

Bredbury Wood, Cheshire, plentifully, *Mr. Joseph Sidebotham*.
Near Congleton, Cheshire, *Mr. S. E. Wilson*.

Obs. 1. Our English plant has both the prickles and petals slightly more elongated than represented in the 'Rubi Germanici.' In other respects both the figure and description in that work represent ours most faithfully.

Obs. 2. This is one of the most beautiful as well as most distinct of our *Rubi*, and is a highly interesting addition to our flora. *R. Sprengelii*, with its concealed branched and creeping barren shoot, and its erect delicate flowering stem growing apparently from the ground, approaches most nearly in appearance to the herbaceous forms, but in appearance only, as it is, though small, weak and trailing, one of the true fruticose species, its panicles in reality emanating from a biennial shoot. In the general form of the leaf and leaflets it very much resembles *R. glandulosus* (particularly the *var. rosaceus*), as also in having the terminal leaflet articulated; in the grooving of the veins above and their prominence beneath it resembles *R. Radula*, while the midrib approaches the carinated aspect of that part in the *var. carinatus* of *R. plicatus*.

The delicately slender wire-like branches and peduncles, and the beautifully bright tint of its flowers, formed of reticulated or rugose-plicate petals, render this plant remarkably beautiful.

Obs. 3. The two kinds of hairiness on the peduncles of this plant are very striking: it is like the patent, parallel villosity of *R. sylvaticus*, combined with the shaggy hairiness, spreading in all directions, of *R. leucostachys*. The shining rigid patent hairs may be seen protruding through the tomentum.

N.B. I am indebted for the above character, description and observations to Dr. Bell Salter, as I have seen no native specimens of *R. Sprengelii*.

15. *R. Leightonianus* (n. sp.); caule arcuato subanguloso hirtio, aculeis paulo inæqualibus rectis paulo declinatis, *foliis* quinatis ternatisve *duplicato-apiculato-dentatis* supra pilosis *subtus pallide viridibus hirtisque*, *foliolo terminali rotundato acuto*, paniculæ in-

ferne foliosæ densissime hirsutæ setosæ ramis brevibus paucifloris divaricatis.

R. villicaulis δ . tenuis, *Bab. Man.* 95.

R. dentatus, *Bab. in literis ad amicos*.

Stem long, arched, slightly angular, hairy; prickles rather numerous and unequal, not confined to the angles of the stem, straight, yellow tinged with purple, subulate from a dilated hairy base; setæ and aciculi wanting; hairs numerous, scattered, slender, spreading, white. Leaves quinate-pedate or ternate by the junction of the lateral pairs, thin; terminal leaflet nearly round, acute, slightly emarginate at the base, doubly and coarsely dentate-crenate-apiculate, except towards the base, which is distantly serrate; intermediate leaflets obovate-acute; lowermost when distinct shortly stalked, oval, acute; all thin, dark green and pilose above, light green with much more conspicuous hairs, especially on the ribs, beneath; petioles and pedicels very hairy and with scattered straight slender strongly declining yellow prickles with a purple base; stipules linear-lanceolate hairy. Flowering shoot and panicle very hairy; prickles slender, straight, declining, yellow tinged with purple at the base. Leaves ternate; leaflets large, oval, acute, finely and nearly regularly dentate-apiculate. Panicle and its branches with numerous setæ which are shorter than the hairs and hidden by them; about three lower branches from the axils of the leaves, the rest, about eight, subtended by trifid slender very hairy bracts, all spreading nearly at right angles to the rachis and bearing a corymb of three or four flowers, the uppermost are 1-flowered; the lower ones about two inches long, the others shortening upwards. Sepals acuminate, densely woolly on both sides, with long hairs and a few short setæ interspersed.

Gathered at Haughmont, Salop, in September 1837, in company with my friend the Rev. W. A. Leighton, author of the justly valued 'Flora of Shropshire.' I have named the plant in his honour, being obliged to place the *R. Leightoni* (Lees) as a variety of *R. rudis*, and wishing to retain his name attached to a species in a genus to the elucidation of which he has so successfully devoted his talents. I also found it at Alborne, Sussex, in 1845.

Obs. The peculiar tooting of the leaves is a characteristic point of great value, very few species being so distinguished. *R. Babingtonii* in the glandulose group is a similar and almost solitary case.

16. *R. carpinifolius* (W. et N.); *caule ascendente subanguloso hirtio, aculeis validis deflexis declinatisve, foliis quinatis coriaceis acute serratis subtus viridis, foliolo terminali ovato angusto acuminato,*

infimis intermediis dissitis, *paniculæ angustæ valde hirsutæ ramis ascendentibus.*

R. carpinifolius, *Rub. Germ.* 36. t. 13; *Eng. Bot. Suppl.* 2664.

Stem suberect, ultimately arching, clothed with fascicles of straight spreading hairs, angular when young. Prickles numerous, of moderate size, equal, hairy, tipped with yellow. Leaflets slightly hairy above, more so and paler beneath. Panicle prickly, compact, often slightly setose, usually with short ascending few-flowered branches, or with a simple close panicle. Flowers and fruit contemporaneous.

Hedges, rare. July to September.

Obs. 1. It has been well observed by Dr. Bell Salter, that the mode of growth of the barren shoot of this species is very similar to that observed in *R. nitidus*. In the present case the autumnal secondary growth more generally takes place, but during the summer months it is truly suberect. The young shoots are usually angular, but the matured wood seldom shows much trace of the angles.

Obs. 2. A variety with rose-coloured flowers, flaccid leaves and more angular stem is noticed in the 'Rubi Germ.' and mentioned as "an extremely beautiful" plant by Dr. Salter, who also observes that this form has a few scattered glands in the panicle.

17. *R. macrophyllus* (W. et N.); caule arcuato anguloso hirto, *aculeis paucis parvis rectis æqualibus, foliis quinatis mucronato-serratis subtus pallide viridibus pubescentibusque, foliolo terminali elliptico-ovato, infimis petiolatis intermediis dissitis, paniculæ compositæ elongato-corymbosæ ramis ascendentibus.*

R. macrophyllus, *Rub. Germ.* 35. t. 12; *Eng. Bot. Suppl.* 2625.

Stem long, purplish, more or less hairy or nearly glabrous. Prickles short, thick at the base, distant. Leaflets irregularly but doubly serrate, acute, or with a long point, downy or distantly pilose beneath. Prickles on the panicle small.

β . *Schlechtendalii* (Bab.); foliolo terminali obovato-cuneato cuspidato irregulariter duplicato-serrato, aculeis majoribus. *Bab. Man.* 95.

R. *Schlechtendalii*, *Rub. Germ.* 34. t. 11.

γ . *amplificatus*; foliolo terminali ut in var. β . sed sæpe subtus pallido, *paniculæ longissimæ angustæ inferne foliosæ ramis erecto-ascendentibus: pubescentia flavescente.*

R. *amplificatus*, *Lees MSS.* !

Hedges and thickets, rare. July and August.

Obs. 1. These plants are usually quite without setæ on the barren shoot, but even on English specimens I believe that a very few may occasionally be detected. On Irish (Killarney) specimens of the typical variety short setæ are moderately abundant, and a

very few extremely short aciculi may also be found: some of these specimens have almost glabrous barren shoots. We thus see an approach to the species included in the next section.

Obs. 2. Mr. Lees has favoured me with fine specimens of his *R. amplifolius*. It presents a different appearance from *R. macrophyllus*, but I fear that it must be considered as a variety of that species. Its chief difference is found in the panicle, which is very much longer, and has rather long axillary branches below, which form a very acute angle with the rachis when the plant is in flower, but afterwards appear to become much more spreading. The prickles on the panicle are usually much stronger, and the dense pubescence is beautifully tinged with yellow. One of the specimens has an enormous panicle, each lower branch of which has the same structure as that which is usual to the whole inflorescence.

*** *Caules arcuati vel procumbentes, radicanes, angulosi, hirti, setosi.*

† *Caules punctis elevatis rigidis, ubi setæ et aciculi sederunt, asperi efficiuntur. Aculei subæquales, in caulis angulis sæpissime congesti.*

18. *R. Babingtonii* (Bell Salt. !); *caule arcuato tereti sulcato vel anguloso lateribus planis striatis aspero, aculeis brevibus declinatis, setis aciculisque multis brevibus, foliis ternatis quinisve mucronato-crenato-dentatis pilosis opacis subtus parce pubescentibus pallide viridibus foliolis obovato-orbiculatis abrupte cuspidatis, paniculæ compositæ longæ tomentosæ aculeatæ setosæ ramis omnibus e foliolorum axillis, sepalis ovato-lanceolatis aciculatis setosis tomentosus a fructu laxè reflexis.*

a. verus; *caule tereti sulcato, aculeis validis, paniculæ ramis racemosis.*

R. Babingtonii, *Bell Salt. in Ann. Nat. Hist. xv. 307.*

A very large stout plant of peculiar appearance. Stem greenish purple, rounded and sulcate, with very short thick-based prickles and numerous aciculi and setæ of the same form. Leaves dark green with a few scattered hairs above, paler green with rather more numerous short hairs beneath, ternate or occasionally quinate by the subdivision of the lateral leaflets, in which case the lower leaflets are stalked. Petioles armed like the stem. Stipules linear, membranaceous, hairy and sparingly glandulose. Panicle more than three feet long, with large branches forming secondary panicles. Rachis, branches, peduncles and petioles with numerous long slender straight declining yellow prickles with broad purple bases, numerous hairs and small aciculi and unequal setæ. Floral leaves very large; lower ones ternate; upper ones simple, ovate-acuminate, lobed. Sepals yellowish,

with a prominent midrib which is lengthened into an acuminate point. Fruit small and composed of small drupes.

β. Bloxamii; caule anguloso lateribus planis striatis, aculeis parvis, aciculis setisque brevissimis, paniculæ ramis brevibus paucifloris corymbosis.

Week Hill, Selborne, Hampshire, *Dr. Bell Salter*. *β.* Very abundant in a lane by Hartshill Wood, Warwickshire, but on the opposite side from the wood, *Rev. A. Bloxam*. July.

Obs. 1. In some respects this plant approaches *R. thyrsiflorus* (Weihe), but in that the greater part of the panicle is extra-foliaceous, in this it is leafy to the end. From *R. Kæhleri*, to which it has some points of resemblance, it is separated by the sectional characters. From the three following species it is abundantly distinguished by its stout aciculi and setæ, usually ternate leaves and large floral leaves. The dentate-apiculate margin of its leaves distinguishes it from all the British species except *R. Leightonianus*, with which however it cannot be confounded, that not being a glandulose plant.

Obs. 2. The *var. β. Bloxamii* has a panicle of very different aspect from that of the typical *R. Babingtonii*, the branches being short and distinctly corymbose, the floral leaves larger, especially towards the summit of the panicle, and more usually pilose. The prickles of the growing shoot are neither so numerous nor so strong, the setæ and aciculi are very short and more equal, the hairs much more numerous; the leaves more frequently quinate. In one instance the terminal leaflet of a ternate leaf is subdividing at its base as in *R. suberectus*, so as to form a partially pinnate leaf.

19. *R. rudis* (Weihe); caule arcuato procumbenteve paululum sulcato aspero, aculeis subæqualibus validis declinatis in caulis angulis permulto locatis aciculis setis pilisque æqualibus multo longioribus, foliis quinatis grosse duplicato-serratis subtus albis, paniculæ longæ foliosæ superne ultra-axillaris ramis corymbosis ascendentibus, sepalis lanceolatis aciculatis setosis a fructu reflexis petioloque adpressis.

R. rudis, *Bell Salter in Ann. Nat. Hist.* xvi. 367.

Stem dark fuscous. Prickles not passing into the aciculi or setæ. Leaves dark green above; lower pair of leaflets stalked. Panicle much-branched; prickles long, slender and nearly horizontal; rachis usually very setose. Sepals generally ending in a foliaceous point, clothed with dark setæ.

α. rudis; foliolo terminali obovato-lanceolato.

R. rudis, *Rub. Germ.* 91. t. 40.

R. Radula, *Leight. Fl. Shrop.* 232.

R. Radula γ. Hystrix, *Bab. Man.* 96.

β . *Leightonii* (Bell Salt. !); foliolo terminali rotundato-obovato abrupte cuspidato. *Ann. Nat. Hist.* xvi. 367.

R. *Leightoni*, *Lees in Leight. Fl. Shrop.* 233.

γ . *Reichenbachii* (Bell Salt. !); foliolo terminali subrotundo, caule hirsuto aciculis setisque paucis. *Ann. Nat. Hist.* xvi. 368.

R. *Reichenbachii*, *Rub. Germ.* 87. t. 37.

δ . *attenuatus*; foliolo terminali obovato longissime acuminato subtus pallide viridi.

R. *echinatus*, *Bab. Man.* 96. not. *Lindl.*

Hedges in the south. β . Shropshire; γ . Isle of Wight, *Dr. Bell Salter*; δ . Somersetshire, Shropshire and Leicestershire. July.

Obs. 1. After much consideration I have formed the same opinion as Dr. Bell Salter upon this and the following species. The usually very setose rachis of the much-branched panicle, and the coarsely serrate and even jagged leaves distinguish this plant from the following, although occasionally one or the other character is wanting. In *var. \beta*. the leaves are usually rather finely but yet irregularly serrate, and in some forms of *var. a*. the rachis has a few setæ. In all the forms the sepals are very strongly reflexed from the fruit, and even closely adpressed to the peduncle; they are also clothed with numerous dark setæ and have generally a leafy point.

Obs. 2. The *vars. \gamma*. and δ . have very much the appearance of being distinct species, and would be so considered did not intermediate states occur. *Var. \delta*. is remarkable for having its leaflets gradually narrowed into a long jagged point, the base being occasionally narrowed in a similar manner. An incorrectly named, and supposed authentic specimen caused me formerly to consider this as *R. echinatus* (*Lindl.*), which I have now ascertained to belong to *R. fusco-ater* of *Weihe*.

Obs. 3. A Silesian specimen named *R. Kæhleri* from *Grabowski*, one of the authors of the excellent 'Fl. Silesiæ,' does not agree with the description in that work, and appears to be a much less prickly form of my *var. attenuatus* of the present species.

20. *R. Radula* (*Weihe*); caule arcuato procumbenteve anguloso aspero, aculeis inæqualibus tenuibus basi dilatatis sparsis aciculos et setas pilosque inæquales crebros longe excedentibus, *foliis* quinatis inæqualiter *argute serratis*, foliolis acuminatis, paniculæ longæ foliosæ superne ultra-axillaris ramis brevibus corymbosis, sepalis ovatis tomentosus a fructu laxè reflexis.

R. *Radula*, *Bell Salter in Ann. Nat. Hist.* xvi. 367.

Stem green or greenish purple. Prickles mostly large, but a few smaller passing insensibly into aciculi. Leaves dark green above, paler beneath; lower pair of leaflets stalked. Panicle

slightly branched, the branches usually short and with few flowers or even 1-flowered; prickles slender; rachis rather sparingly setose. Sepals without any leafy point, clothed with a whitish tomentum and a few setæ.

α. Radula; caule valde setoso pilis paucis, foliis glabris superne venis impressis subtus albo-viridibus pubescentibusque, foliolo terminali ovato acuminato.

R. Radula, *Rub. Germ.* 89. t. 39.

R. Radula β. rudis, *Bab. Man.* 96.

β. Hystrix (Bell Salt. !); caule pauci-setoso, foliis pilis sparsis venisque paulo impressis subtus subhirtis, foliolo terminali inferne attenuato. *Ann. Nat. Hist.* xvi. 369.

R. Hystrix, *Rub. Germ.* 92. t. 41.

γ. pygmæus (Bell Salt. !); caule tereti, aculeis aciculis setis pilisque multis, foliis pilis sparsis subtus viridibus tomentosis; foliolo terminali obovato-acuminato: petiolo aculeis multis inæqualibus paululum decurvatis aciculisque brevibus validis armato. *Ann. Nat. Hist.* xvi. 369.

R. pygmæus, *Rub. Germ.* 93. t. 42.

δ. foliosus (Bell Salt. !); caule subanguloso, aciculis setis pilisque brevissimis, foliis pilis sparsis subtus viridi-albis tomentosis, foliolo terminali ovato-acuminato: petiolo aculeis multis inæqualibus paululum decurvatis aciculisque brevibus validis armato. *Ann. Nat. Hist.* xvi. 369.

R. foliosus, *Rub. Germ.* 74. t. 28.

Hedges and thickets. *α.* Dumfries-shire; Edinburghshire; Dorset. *β.* Sussex; Isle of Wight. *γ.* Renfrewshire; near Bristol. *δ.* Glen Falloch, N. B. July and August.

Obs. 1. The paler tint of the stem, much less strongly toothed leaves and closer panicle appear to distinguish all the above forms, which Dr. Bell Salter has combined under the name of *R. Radula*, from the *R. rudis*. Here also the prickles are not so nearly equal, although the larger ones are usually almost equal, and greatly exceed in size the under series which gradually merges in short very thick aciculi and setæ.

Obs. 2. The partial and general petioles, and also the midrib of the leaves on the barren stems, are furnished with moderately numerous rather slender but short hooked prickles, with a very few short rigid points interspersed: but in the less frequent forms referred above to *R. pygmæus* and *R. foliosus* of the German botanists, these rigid points become very numerous, and together with the prickles vary so much in size as to merge insensibly into each other.

Obs. 3. The plant referred above to *R. foliosus* (Weihe) differs slightly from the figure and description in the 'Rubi Germ.' Its

panicle is not leafy to the summit, but the upper branches are subtended by trifid bracts. It agrees so well in most other respects and in general appearance with that plate, that I have very little doubt of its claims to the name of *R. foliosus*.

21. *R. Lingua* (Weihe); caule procumbente arcuatove subanguloso aspero, aculeis inæqualibus subrectis declinatis, aciculis setis pilisque paucis brevibus, foliis quinatis ternatisve subglabris subtus pallide viridibus albidisve hirtis, foliolo terminali ovato abrupte cuspidato, *paniculæ laxæ ramis sæpissime unifloris*, foliis floralibus simplicibus magnis, sepalis ovatis tomentosus cuspidatis a fructu laxe reflexis.

R. Lingua, *Rubi Germ.* 88. t. 38.

Stem green or greenish purple. Prickles not very numerous, moderate, purplish yellow, fewer than in the preceding species and less decidedly larger than the aciculi. Leaves usually green on both sides; terminal leaflet generally remarkably abrupt, lower pair stalked. *Panicle nearly simple with very long pedicels* or 2—3-flowered branches, leafy below; lower floral leaves ternate, upper simple; rachis and branches clothed with an ashy tomentum, short setæ and slender purplish prickles. Calyx greenish.

β. tomentosus; foliolo terminali acuminato subtus tomentoso albidocinerascente, *paniculæ ramis corymbosis subtrifloris*.

R. scaber, *Rub. Germ.* t. 32?

Oakhampton, Devon; Jardine Hall, Dumfries-shire. *β.* Jersey. Poole, Dorset, *Dr. Bell Salter*. July to September.

Obs. 1. The Oakhampton plant agrees very exactly with the plate in the 'Rubi Germ.' In it one or two of the lowermost branches of the panicle have more than one flower, the others being reduced to a single flower, which thus appears to be provided with a peduncle of at least an inch in length. The Dumfries-shire specimens only differ by having these branches all very much shorter so as to give a close appearance to the panicle. In this latter plant the flowers and fruit are contemporaneous.

Obs. 2. The *var. β. tomentosus* has the general appearance of *R. scaber* (Weihe) as represented in the 'Rubi Germ.,' but that plant has much smaller and more decidedly hooked prickles on its barren stem, and the under side of all its leaves pale green and only slightly pubescent. It probably is a state of this species.

It seems doubtful, as suggested by Dr. Salter, if *R. Lingua* will not ultimately be shown to be a form of *R. Radula*.

[To be continued.]